

(No Model.)

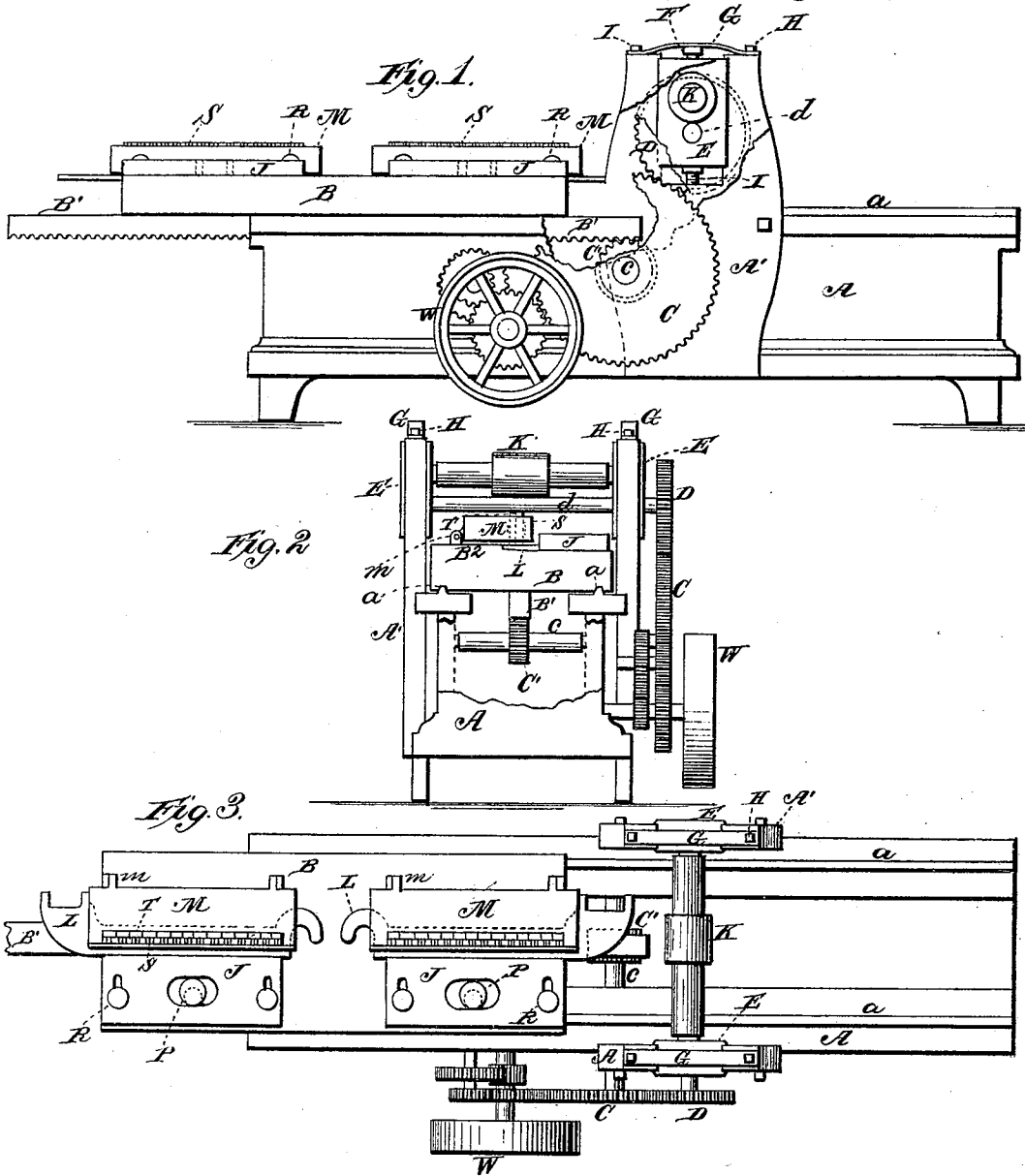
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H. FAIRBANKS & H. PADDOCK.

MACHINE FOR STAMPING FIGURES ON SCALE BEAMS.

No. 245,366.

Patented Aug. 9, 1881.



WITNESSES

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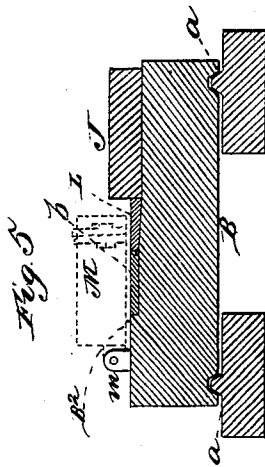
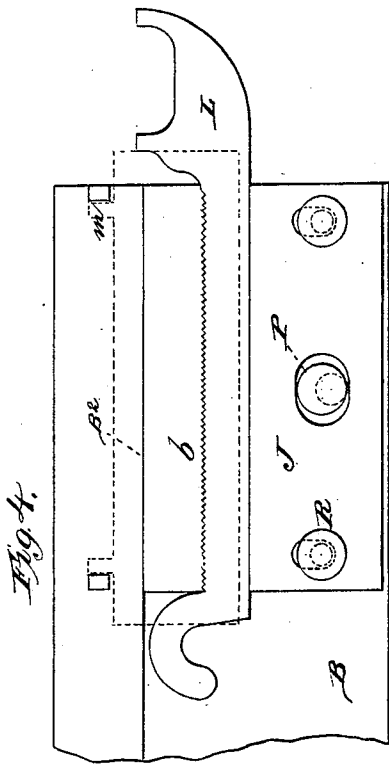
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# UNITED STATES PATENT OFFICE.

HENRY FAIRBANKS AND HARVLIN PADDOCK, OF ST. JOHNSBURY, VERMONT,  
ASSIGNORS TO E. & T. FAIRBANKS & CO., OF SAME PLACE.

## MACHINE FOR STAMPING FIGURES ON SCALE-BEAMS.

SPECIFICATION forming part of Letters Patent No. 245,366, dated August 9, 1881.

Application filed January 15, 1881. (No model.)

*To all whom it may concern:*

Be it known that we, HENRY FAIRBANKS and HARVLIN PADDOCK, both citizens of the United States, residing at St. Johnsbury, in the county of Caledonia and State of Vermont, have invented certain new and useful Improvements Relating to Machines for Marking Figures on Scale-Beams, of which the following is a specification.

The marking is or may be an entirely distinct operation from the graduating or producing the notches in the edge or the lines in the face which give the exact points for the weight, but it is important that the figures be placed in positions approximating the graduations which they designate. It is especially important that the figures be very clearly produced.

There are many ways of making the figures. Many considerations, among which is economy, tend to give the preference to stamping or indenting the figures by previously-prepared steel dies. There are difficulties incident to stamping the figures rapidly and uniformly by machinery. There is a liability to stretch the metal of the beam by stamping the figures. For this reason it is common to mark the figures in advance of the graduating. With our improved machine the graduating is effected first.

In our improved machine the marking is done by separate dies or types mounted entirely independent of each other, with great facilities for rearranging, exchanging, and repairing. It imprints the dies only one at a time, thereby insuring a cleanly-stamped figure, without slurring or other fault, however much the beam may stretch or spring during the operation; and we provide for securing an even depth of impression, although the beams may differ in thickness, and there may be differences in thickness in different parts of the same beam.

Our invention avoids another serious difficulty. It is found that if neighboring figures or other marks are stamped simultaneously the metal between the marks is also depressed. The production of the marks successively instead of simultaneously, avoids this mischief.

The following is a description of what we consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a side elevation, a portion of one end being removed. Fig. 2 is an end elevation, and Fig. 3 a plan view. The above figures represent the machine as formed with the bearing-surface for the graduated edge of the scale-beam formed as a permanent part of the carriage. The succeeding figures show this surface formed by a removable plate or bearing piece. Fig. 4 is a plan view of the table, with the type-holder removed or only indicated in dotted outline. Fig. 5 is a corresponding cross-section.

Similar letters of reference indicate like parts in all the figures.

A A' is a fixed frame-work, equipped with stout slideways *a*, adapted to strongly support a traversing carriage, B, on which the beams are secured. The lower face of the carriage is formed with a rack, B', which is engaged by a pinion, C', keyed on a shaft, *c*, and slowly turned during the operation by a gear-wheel, C, which receives motion through a train of gearing from a pulley, W, driven by a belt from a steam-engine or other suitable power. The gear-wheel C engages with a smaller wheel, D, which is fixed on a small steel roller, *d*, which performs the important function of pressing successively upon the dies which imprint the several figures. The roller *d* is of small diameter, so that it will impress but one number at a time. We enable it to exert the proper force without springing by mounting over it a roller, K, properly formed to bear upon it close to the point where it acts on the dies. This upper roll, K, is of sufficient diameter and stiffness to support the slender roller *d* very reliably. The rollers *d* and K are mounted in boxes E, which are adapted to slide vertically in stout jaws A' on the fixed frame-work. An adjusting-screw, F, inserted in E, as shown, receives the force of a stiff spring, G, which extends across the jaw, and is held down by bolts H. Adjusting-screws I are

mounted under the boxes E, and prevent the rollers from ever being depressed below the proper level. As the carriage B slowly traverses under the roll *d*, dies formed to imprint the proper figures are successively forced down to the proper depth in the smooth face of the scale-beam, and the corresponding figures are clearly stamped on the beam.

We have shown two beams as following each other on the same carriage, marking opposite sides, but this is not essential. We can mount a greater or less number, as convenience may require.

It will be understood that the under surface of the carriage B is formed to apply and traverse accurately on the guideways *a*. The upper surface is peculiar. It is formed with an offset, B<sup>2</sup>, adapted to receive one edge of the beam. A stout clamp, J, firmly holds the beam in the required position by being moved forcibly by an eccentric, P, turned by a wrench applied below. (Not represented.) The clamp J is loosely held by bolts R inserted through slots into the carriage B. After the scale-beam L has been clamped flat in the required position on the carriage B, we bring down upon it a die-carrier or type-holder, M, turning on hinges *m*, and carrying two sets of movable pieces, S T. The set of pieces S are types or dies having properly-formed faces to imprint the desired figures. The set of pieces T are bearers having plane bottoms and tops. These pieces T are of a little less length than the marking-dies S. The feet or bases of the bearers T present an extended smooth surface to bear on the beam immediately adjacent to the figures. As the carriage B is traversed under the roller *d*, the latter acts successively on the several movable pieces S and T, always acting on a pair or one of each at the same time. The strongly-supported roller *d* depresses the die S and marks the desired figure clearly and to a proper depth in the beam L; but so soon as the type or marking-die has been depressed to the proper depth, it cannot go any deeper because the roller *d* will then commence to bear also on the adjacent bearer T. The latter bears on so large a surface that it will not sink into the beam, but will cause the springs G to yield, and thus, by allowing the rolls *d* and K to rise, will allow the operation to proceed. The motion of the carriage B brings all the types or marking-dies S in contact with the small hard roller *d*, and causes them all to be depressed in succession, while the close proximity of a blank or bearer, T, insures that none of the dies or marking-types shall be depressed too far.

The scale-beam being previously notched, the offset B<sup>2</sup> is equipped with a similarly-notched piece of steel, *b*. By engaging firmly with the beam in that manner, not only holding the beam strongly by pinching or lateral compression between the two surfaces J and *b*, but also by taking a firm hold in the several notches of its graduated surface, the metal is confined so firmly that it cannot stretch. The notched

piece *b* is firmly confined by screws or other devices, (not represented,) which allow it to be removed and exchanged at will.

The machine, by driving each figure or other stamp separately, makes each as clear as though marked by hand, while the operation may be conducted very rapidly.

Our machine marks the beams as clearly as the slow and costly method of engraving, while, by reason of our method of depressing the several dies separately, we insure a clear impression for each without experiencing any stretching movement of the metal, and also avoid the depression of the metal between the figures.

It will be understood that the spur-wheels, which drive the roller *d*, are of such size that the surface of the roller moves at the same rate as the carriage B, which is an important feature.

Not only the figures but also the graduation-marks on the sides of the scale-beams are successfully made by this machine.

We form each die S and bearer T with a projection in one edge which engages loosely in a groove in the adjacent surface of the holder M, so as to prevent these movable parts from falling out while allowing sufficient end motion. The holder M is made in two parts secured by countersunk bolts to allow the movable parts to be secured and released as required in effecting any required changes.

Modifications may be made in many of the details.

We provide the carriage B with many holes to receive the eccentric P and the bolts R in different positions, and also to correspondingly provide for different positions of the hinges *m*.

By providing exchangeable clamps J and exchangeable die-holders M *m* we can easily adapt a single machine for marking a great variety of scale-beams of different sizes, widths, lengths, and other conditions, as thickness, taper, &c.

We can tighten the bolts R so soon as the eccentric P has brought the clamp J into proper contact with the beam.

We can provide bolts or other means for holding the die-holder M very firmly in position to avoid any slight movement during the operation.

The notched steel *b* may be made in one with the body of the table, or the notches may be formed on the clamp J, in which case the beam would be inserted in the machine in the reversed position. It is sufficient that the surface which is strongly clamped against the previously-notched edge of the beam shall be correspondingly notched, so as to engage reliably in the several notches and hold the metal positively against stretching.

We can realize some of the benefits of our invention by working the types and bearers as herein described, and producing the successive impressions of the figures in the metal of the beam prior to the marking of the graduating notches. In such case we prefer to dis-

pense with the notched bar *b* and to clamp the beam as firmly as may be between smooth surfaces.

We have indicated a series of gear-wheels to allow the pulley *W* to run rapidly while other parts of the mechanism run slowly; but the pulley *W*, if preferred, may be made of sufficient size and weight to run steadily with a slow motion, and receiving the force through a sufficiently-wide belt may transmit it directly to the working parts. We can use the machine to mark various other articles, particularly iron and steel squares for carpenters' uses.

It is possible to produce the figures or whatever is to be stamped by raising such figures or other devices upon the surface of the roller *d*, and in such case the motion of the roller and table with the parts adjusted to bring the beam *L* into proper contact with the roller *d* would effect the marking. The roll *K*, if formed with collars or enlargements each side, and leaving the roll *d* untouched at the bearing-point, will allow of such a construction, if preferred. Such working would realize a portion of the advantages of our invention. The separate types and bearers effect the end much more desirably, and allow an indefinite range of figures.

We accomplish very good results by folding the beam to be marked between two die-carriers or type-holders hinged together, each being similar to the single one *M* and similarly provided with movable dies or type, and when so folded rolling both between a pair of rollers so geared together as to have equal surface-motion.

Instead of making the projection on the dies and bearer we can make them on the holder and produce the required wider notches in the removable parts.

We claim as our invention—

1. The straight reciprocating carriage *B* and

means for holding thereon the article to be impressed, in combination with the small roll *d* and stout roll *K*, as herein specified.

2. The rolls *d* *K*, carriage *B*, and clamping means *J* *b*, in combination with each other, and with means *C* *D*, for imparting an equal surface-motion, and with springs *G* and adjusting means *F*, as and for the purposes herein specified.

3. In combination with a roll, *d*, carriage *B*, and operating means *C* *D*, a series of separately-movable punches or dies, *S*, adapted to be separately depressed by the roll *d*, as and for the purposes herein specified.

4. The bearers *T*, in combination with the separately-movable dies *S*, carriage *B*, roll *d*, boxes *E*, and springs *G*, as herein specified.

5. The hinged die-holder *M* *m*, in combination with the dies *S* and bearers *T*, and means for depressing the dies separately, as herein specified.

6. The combination of the hinged die-holder *M* *m*, separately-movable dies *S*, and bearers *T* with the carriage *B*, having an offset *B*<sup>2</sup>, clamping-piece *J* with operating means *P*, and with the roll *d*, springs *G*, and adjusting means *F*, as herein specified.

7. The notched surface *b* on the carriage *B*, moved as shown, in combination with the opposing clamping-surface *J*, and with means for imprinting the several figures, substantially as and for the purposes described.

In testimony whereof we have hereunto set our hands, at St. Johnsbury, Vermont, this 27th day of December, 1880, in the presence of two subscribing witnesses.

HENRY FAIRBANKS.  
HARVLIN PADDOCK.

Witnesses:

FRANCIS SWITSER,  
P. D. BLODGETT.